General

Guideline Title

Attention deficit hyperactivity disorder. Diagnosis and management of ADHD in children, young people and adults.

Bibliographic Source(s)

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Guideline Status

Note: This guideline has been updated. The National Guideline Clearinghouse (NGC) is working to update this summary.

Recommendations

Major Recommendations

Note: This guideline has been updated. The National Guideline Clearinghouse (NGC) is working to update this summary. The recommendations that follow are based on the previous version of the guideline.

Note from the National Guideline Clearinghouse (NGC): This guideline was developed by the National Collaborating Centre for Mental Health (NCC-MH) on behalf of the National Institute for Health and Clinical Excellence (NICE). See the "Availability of Companion Documents" field for the full version of this guidance.

Prerequisites of Treatment and Care for All People with Attention Deficit Hyperactivity Disorder (ADHD)

People with ADHD require integrated care that addresses a wide range of personal, social, educational, and occupational needs. Care should be provided by adequately trained healthcare and education professionals.

Organisation and Planning of Services

People with ADHD would benefit from improved organisation of care and better integration of paediatric, child, and adolescent mental health services (CAMHS) and adult mental health services.

- Mental health trusts, and children's trusts that provide mental health/child development services, should form multidisciplinary specialist ADHD teams and/or clinics for children and young people and separate teams and/or clinics for adults. These teams and clinics should have expertise in the diagnosis and management of ADHD, and should:
    - Provide diagnostic, treatment, and consultation services for people with ADHD who have complex needs, or where general

psychiatric services are in doubt about the diagnosis and/or management of ADHD
    - Put in place systems of communication and protocols for information sharing among paediatric, child and adolescent, forensic, and adult mental health services for people with ADHD, including arrangements for transition between child and adult services
    - Produce local protocols for shared care arrangements with primary care providers, and ensure that clear lines of communication between primary and secondary care are maintained
    - Ensure age-appropriate psychological services are available for children, young people, and adults with ADHD, and for parents or carers.

  The size and time commitment of these teams should depend on local circumstances (for example, the size of the trust, the population covered, and the estimated referral rate for people with ADHD).

- Every locality should develop a multi-agency group, with representatives from multidisciplinary specialist ADHD teams, paediatrics, mental health and learning disability trusts, forensic services, child and adolescent mental health services (CAMHS), the Children and Young People's Directorate (CYPD) (including services for education and social services), parent support groups and others with a significant local involvement in ADHD services.
  The group should:

    - Oversee the implementation of this guideline
    - Start and coordinate local training initiatives, including the provision of training and information for teachers about the characteristics of ADHD and its basic behavioural management
    - Oversee the development and coordination of parent-training/education programmes
    - Consider compiling a comprehensive directory of information and services for ADHD including advice on how to contact relevant services and assist in the development of specialist teams.

Information, Consent, the Law, and Support for People with ADHD and Their Carers

Many people with ADHD, and their parents or carers, experience stigma and other difficulties because of the symptoms and impairment associated with ADHD and current practice within healthcare and education. The following recommendations have been developed based on the experiences of people with ADHD and their families.

- Healthcare professionals should develop a trusting relationship with people with ADHD and their families or carers by:
    - Respecting the person and their family's knowledge and experience of ADHD
    - Being sensitive to stigma in relation to mental illness.
- Healthcare professionals should provide people with ADHD and their families or carers with relevant, age-appropriate information (including written information) about ADHD at every stage of their care. The information should cover diagnosis and assessment, support and self-help, psychological treatment, and the use and possible side effects of drug treatment.
- When assessing a child or young person with ADHD, and throughout their care, healthcare professionals should:
    - Allow the child or young person to give their own account of how they feel, and record this in the notes
    - Involve the child or young person and the family or carer in treatment decisions
    - Take into account expectations of treatment, so that informed consent can be obtained from the child's parent or carer or the young person before treatment is started.
- Healthcare professionals working with children and young people with ADHD should be:
    - Familiar with local and national guidelines on confidentiality and the rights of the child
    - Able to assess the young person's understanding of issues related to ADHD and its treatment (including Gillick competence)
    - Familiar with parental consent and responsibilities, child protection issues, the Mental Health Act (2007) and the Children Act (1989).
- Healthcare professionals should work with children and young people with ADHD and their parents or carers to anticipate major life changes (such as puberty, starting or changing schools, the birth of a sibling) and make appropriate arrangements for adequate personal and social support during times of increased need. The need for psychological treatment at these times should be considered.
- Adults with ADHD should be given written information about local and national support groups and voluntary organisations.
- Healthcare professionals should ask families or carers about the impact of ADHD on themselves and other family members, and discuss any concerns they may have. Healthcare professionals should:
    - Offer family members or carers an assessment of their personal, social and mental health needs
    - Encourage participation in self-help and support groups where appropriate
    - Offer general advice to parents and carers about positive parent– and carer–child contact, clear and appropriate rules about behaviour, and the importance of structure in the child or young person's day appropriate
    - Explain that parent-training/education programmes do not necessarily imply bad parenting, and that their aim is to optimize parenting

skills to meet the above-average parenting needs of children and young people with ADHD.

Training

Healthcare and education professionals require training to better address the needs of people with ADHD.

- Trusts should ensure that specialist ADHD teams for children, young people and adults jointly develop age-appropriate training programmes for the diagnosis and management of ADHD for mental health, paediatric, social care, education, forensic and primary care providers and other professionals who have contact with people with ADHD.
- Child and adult psychiatrists, paediatricians, and other child and adult mental health professionals (including those working in forensic services) should undertake training so that they are able to diagnose ADHD and provide treatment and management in accordance with this guideline.
- The Department for Children, Schools and Families should consider providing more education to trainee teachers about ADHD by working with the Training and Development Agency for Schools (TDA) and relevant health service organisations to produce training programmes and guidance for supporting children with ADHD.

Care Pathway for the Treatment and Care of People with ADHD

The recommendations below form a care pathway that sets out how children, young people and adults should receive help, treatment and care from different services, from the community (including primary care and education), through to secondary and tertiary services. Most of the recommendations describe the approach for children but some of these also apply to adults. The pathway also covers transition between child and adult services and specific treatment for adults, including those who were first diagnosed with ADHD in adulthood.

Specific recommendations on the use of drugs, monitoring side effects, improving adherence, and discontinuing drug treatment are also provided.

Identification, Pre-diagnostic Intervention in the Community, and Referral to Secondary Services

Children and young people with behavioural problems suggestive of ADHD can be referred by their school or primary care practitioner for parent-training/education programmes without a formal diagnosis of ADHD. The diagnosis of ADHD in children, young people, and adults should take place in secondary care.

Identification and Referral in Children and Young People with ADHD

- Universal screening for ADHD should not be undertaken in nursery, primary, and secondary schools.
- When a child or young person with disordered conduct and suspected ADHD is referred to a school's special educational needs coordinator (SENCO), the SENCO, in addition to helping the child with their behaviour, should inform the parents about local parent-training/education programmes.
- Referral from the community to secondary care may involve health, education, and social care professionals (for example, general practitioners [GPs], paediatricians, educational psychologists, SENCOs, social workers) and care pathways can vary locally. The person making the referral to secondary care should inform the child or young person's GP.
- When a child or young person presents in primary care with behavioural and/or attention problems suggestive of ADHD, primary care practitioners should determine the severity of the problems, how these affect the child or young person and the parents or carers and the extent to which they pervade different domains and settings.
- If the child or young person's behavioural and/or attention problems suggestive of ADHD are having an adverse impact on their development or family life, healthcare professionals should consider:
    - A period of watchful waiting of up to 10 weeks
    - Offering parents or carers a referral to a parent-training/education programme (this should not wait for a formal diagnosis of ADHD).

  If the behavioural and/or attention problems persist with at least moderate impairment, the child or young person should be referred to secondary care (that is, a child psychiatrist, paediatrician, or specialist ADHD CAMHS) for assessment.

- If the child or young person's behavioural and/or attention problems are associated with severe impairment, referral should be made directly to secondary care (that is, a child psychiatrist, paediatrician, or specialist ADHD CAMHS) for assessment.
- Group-based parent-training/education programmes are recommended in the management of children with conduct disorders (this recommendation is taken from the NICE technology appraisal guidance 102, 'Parent-training/education programmes in the management of children with conduct disorders.' See recommendation under "Treatment for Pre-school Children" below for the extended use of these programmes to include children with ADHD).
- Primary care practitioners should not make the initial diagnosis or start drug treatment in children or young people with suspected ADHD.
- A child or young person who is currently treated in primary care with methylphenidate, atomoxetine, dexamfetamine, or any other

psychotropic drug for a presumptive diagnosis of ADHD, but has not yet been assessed by a specialist in ADHD in secondary care, should be referred for assessment to a child psychiatrist, paediatrician, or specialist ADHD CAMHS as a matter of clinical priority.

Identification and Referral in Adults with ADHD

- Adults presenting with symptoms of ADHD in primary care or general adult psychiatric services, who do not have a childhood diagnosis of ADHD, should be referred for assessment by a mental health specialist trained in the diagnosis and treatment of ADHD, where there is evidence of typical manifestations of ADHD (hyperactivity/impulsivity and/or inattention) that:
    - Began during childhood and have persisted throughout life
    - Are not explained by other psychiatric diagnoses (although there may be other coexisting psychiatric conditions)
    - Have resulted in or are associated with moderate or severe psychological, social and/or educational or occupational impairment.
- Adults who have previously been treated for ADHD as children or young people and present with symptoms suggestive of continuing ADHD should be referred to general adult psychiatric services for assessment. The symptoms should be associated with at least moderate or severe psychological and/or social or educational or occupational impairment.

Diagnosis of ADHD

ADHD is a valid clinical disorder that can be distinguished from coexisting conditions (although it is most commonly comorbid) and the normal spectrum. ADHD differs from the normal spectrum because there are high levels of hyperactivity/impulsivity and/or inattention that result in significant psychological, social, and/or educational or occupational impairment that occurs across multiple domains and settings and persists over time.

- A diagnosis of ADHD should only be made by a specialist psychiatrist, paediatrician, or other appropriately qualified healthcare professional with training and expertise in the diagnosis of ADHD, on the basis of:
    - A full clinical and psychosocial assessment of the person; this should include discussion about behaviour and symptoms in the different domains and settings of the person's everyday life
    - A full developmental and psychiatric history
    - Observer reports and assessment of the person's mental state
- A diagnosis of ADHD should not be made solely on the basis of rating scale or observational data. However, rating scales such as the Conners' rating scales and the Strengths and Difficulties questionnaire are valuable adjuncts, and observations (for example, at school) are useful when there is doubt about symptoms.
- For a diagnosis of ADHD, symptoms of hyperactivity/impulsivity and/or inattention should:
    - Meet the diagnostic criteria in Diagnostic and Statistical Manual of Mental Disorders 4th edition (DSM-IV) or International Classification of Diseases 10th revision (ICD-10) (hyperkinetic disorder) (Note: The ICD-10 exclusion on the basis of a pervasive developmental disorder being present, or the time of onset being uncertain, is not recommended), and
    - Be associated with at least moderate psychological, social, and/or educational or occupational impairment based on interview and/or direct observation in multiple settings, and
    - Be pervasive, occurring in two or more important settings including social, familial, educational and/or occupational settings.

  As part of the diagnostic process, include an assessment of the person's needs, coexisting conditions, social, familial, and educational or occupational circumstances, and physical health. For children and young people, there should also be an assessment of their parents' or carers' mental health.

- ADHD should be considered in all age groups, with symptom criteria adjusted for age-appropriate changes in behaviour.
- In determining the clinical significance of impairment resulting from the symptoms of ADHD in children and young people, their views should be taken into account wherever possible.

Post-Diagnostic Advice

After diagnosis people with ADHD and their parents or carers may benefit from advice about diet, behaviour, and general care.

General Advice

- Following a diagnosis of ADHD, healthcare professionals should consider providing all parents or carers of all children and young people with ADHD self-instruction manuals, and other materials such as videos, based on positive parenting and behavioural techniques.

Dietary Advice

- Healthcare professionals should stress the value of a balanced diet, good nutrition, and regular exercise for children, young people, and

adults with ADHD.

- The elimination of artificial colouring and additives from the diet is not recommended as a generally applicable treatment for children and young people with ADHD.
- Clinical assessment of ADHD in children and young people should include asking about foods or drinks that appear to influence their hyperactive behaviour. If there is a clear link, healthcare professionals should advise parents or carers to keep a diary of food and drinks taken and ADHD behaviour. If the diary supports a relationship between specific foods and drinks and behaviour, then referral to a dietitian should be offered. Further management (for example, specific dietary elimination) should be jointly undertaken by the dietitian, mental health specialist or paediatrician, and the parent or carer and child or young person.
- Dietary fatty acid supplementation is not recommended for the treatment of ADHD in children and young people.

Treatment for Children and Young People

Treatment for Pre-School Children

Parent-training/education programmes are the first-line treatment for parents or carers of pre-school children. These programmes are the same as those recommended for the parents or carers of other children with conduct disorder. If more help is needed the child can be referred to a tertiary service.

- Drug treatment is not recommended for pre-school children with ADHD.
- Following a diagnosis of ADHD in a child of pre-school age, healthcare professionals should, with the parents' or carers' consent, contact the child's nursery or pre-school teacher to explain:
    - The diagnosis and severity of symptoms and impairment
    - The care plan
    - Any special educational needs.
- Healthcare professionals should offer parents or carers of preschool children with ADHD a referral to a parent-training/education programme as the first-line treatment if the parents or carers have not already attended such a programme or the programme has had a limited effect.
- Group-based parent-training/education programmes, developed for the treatment and management of children with conduct disorders, should be fully accessible to parents or carers of children with ADHD whether or not the child also has a formal diagnosis of conduct disorder (as recommended in the NICE technology appraisal guidance 102, 'Parent-training/education programmes in the management of children with conduct disorders').
- Individual-based parent-training/education programmes (as recommended in the NICE technology appraisal guidance 102, 'Parent-training/education programmes in the management of children with conduct disorders') are recommended in the management of children with ADHD when:
    - A group programme is not possible because of low participant numbers
    - There are particular difficulties for families in attending group sessions (for example, because of disability, needs related to diversity such as language differences, parental ill-health, problems with transport, or where other factors suggest poor prospects for therapeutic engagement)
    - A family's needs are too complex to be met by group-based parent-training/education programmes.
- When individual-based parent-training/education programmes for pre-school children with ADHD are undertaken, the skills training stages should involve both the parents or carers and the child.
- It is recommended that all parent-training/education programmes, whether group- or individual-based, should:
    - Be structured and have a curriculum informed by principles of social-learning theory
    - Include relationship-enhancing strategies
    - Offer a sufficient number of sessions, with an optimum of 8 to 12, to maximise the possible benefits for participants
    - Enable parents to identify their own parenting objectives
    - Incorporate role-play during sessions, as well as homework to be undertaken between sessions, to achieve generalisation of newly rehearsed behaviours to the home situation
    - Be delivered by appropriately trained and skilled facilitators who are supervised, have access to necessary ongoing professional development, and are able to engage in a productive therapeutic alliance with parents
    - Adhere to the programme developer's manual and employ all of the necessary materials to ensure consistent implementation of the programme (this recommendation is taken from the NICE technology appraisal guidance 102, 'Parent-training/education programmes in the management of children with conduct disorders').
- Consideration should be given to involving both of the parents or all carers of children or young people with ADHD in parent-training/education programmes wherever this is feasible.
- Programmes should demonstrate proven effectiveness. This should be based on evidence from randomised controlled trials or other suitable

rigorous evaluation methods undertaken independently (this recommendation is taken from the NICE technology appraisal guidance 102, 'Parent-training/education programmes in the management of children with conduct disorders.'
- Programme providers should also ensure that support is available to enable the participation of parents who might otherwise find it difficult to access these programmes (this recommendation is taken from the NICE technology appraisal guidance 102, 'Parent-training/education programmes in the management of children with conduct disorders').
- If overall treatment, including parent-training/education programmes, has been effective in managing ADHD symptoms and any associated impairment in pre-school children, before considering discharge from secondary care healthcare professionals should:
    - Review the child, with their parents or carers and siblings, for any residual coexisting conditions and develop a treatment plan for these if needed
    - Monitor for the recurrence of ADHD symptoms and any associated impairment that may occur after the child starts school.
- If overall treatment, including parent-training/education programmes, has not been effective in managing ADHD symptoms and any associated impairment in pre-school children, healthcare professionals should consider referral to tertiary services for further care.

Treatment for School-Age Children and Young People with ADHD and Moderate Impairment

Group-based parent-training/education programmes are usually the first-line treatment for parents and carers of children and young people of school age with ADHD and moderate impairment. This may also include group psychological treatment (cognitive behavioural therapy [CBT] and/or social skills training) for the younger child. For older age groups, individual psychological treatment may be more acceptable if group behavioural or psychological approaches have not been effective, or have been refused. See the section above for recommendations on conducting parent-training/education programmes that also apply to school-age children with ADHD. Drug treatment may be tried next for those children and young people with ADHD and moderate levels of impairment.

- Drug treatment is not indicated as the first-line treatment for all school-age children and young people with ADHD. It should be reserved for those with severe symptoms and impairment or for those with moderate levels of impairment who have refused nondrug interventions, or whose symptoms have not responded sufficiently to parent-training/education programmes or group psychological treatment.
- Following a diagnosis of ADHD in a school-age child or young person healthcare professionals should, with the parents' or carers' consent, contact the child or young person's teacher to explain:
    - The diagnosis and severity of symptoms and impairment
    - The care plan
    - Any special educational needs.
- Teachers who have received training about ADHD and its management should provide behavioural interventions in the classroom to help children and young people with ADHD.
- If the child or young person with ADHD has moderate levels of impairment, the parents or carers should be offered referral to a group parent-training/education programme, either on its own or together with a group treatment programme (CBT and/or social skills training) for the child or young person.
- When using group treatment (CBT and/or social skills training) for the child or young person in conjunction with a parent-training/education programme, particular emphasis should be given to targeting a range of areas, including social skills with peers, problem solving, self-control, listening skills and dealing with and expressing feelings. Active learning strategies should be used, and rewards given for achieving key elements of learning.
- For older adolescents with ADHD and moderate impairment, individual psychological interventions (such as CBT or social skills training) may be considered as they may be more effective and acceptable than group parent-training/education programmes or group CBT and/or social skills training.
- For children and young people (including older age groups) with ADHD and a learning disability, a parent-training/education programme should be offered on either a group or individual basis, whichever is preferred following discussion with the parents or carers and the child or young person.
- When parents or carers of children or young people with ADHD undertake parent-training/education programmes, the professional delivering the sessions should consider contacting the school and providing the child or young person's teacher with written information on the areas of behavioural management covered in these sessions. This should only be done with parental consent.
- Following successful treatment with a parent-training/education programme and before considering discharge from secondary care, the child or young person should be reviewed, with their parents or carers and siblings, for any residual problems such as anxiety, aggression or learning difficulties. Treatment plans should be developed for any coexisting conditions.
- Following treatment with a parent-training/education programme, children and young people with ADHD and persisting significant impairment should be offered drug treatment.

Treatment for School-Age Children and Young People with Severe ADHD (Hyperkinetic Disorder) and Severe Impairment

The first-line treatment for school-age children and young people with severe ADHD (hyperkinetic disorder) and severe impairment is drug treatment. If the child or young person wishes to refuse medication and/or the parents or carers reject it, a psychological intervention may be tried but drug treatment has more benefits and is superior to other treatments for this group.

- In school-age children and young people with severe ADHD, drug treatment should be offered as the first-line treatment. Parents should also be offered a group-based parent-training/education programme.
- Drug treatment should only be initiated by an appropriately qualified healthcare professional with expertise in ADHD and should be based on a comprehensive assessment and diagnosis. Continued prescribing and monitoring of drug therapy may be performed by general practitioners, under shared care arrangements (Note: This recommendation is taken from the NICE technology appraisal 98, 'Methylphenidate, atomoxetine and dexamfetamine for attention deficit hyperactivity disorder [ADHD] in children and adolescents'). At the time of publication [September 2008], methylphenidate and atomoxetine did not have UK marketing authorisation for use in children younger than 6 years. Informed consent should be obtained and documented).
- If drug treatment is not accepted by the child or young person with severe ADHD, or their parents or carers, healthcare professionals should advise parents or carers and the child or young person about the benefits and superiority of drug treatment in this group. If drug treatment is still not accepted, a group parent-training/education programme should be offered.
- If a group parent-training/education programme is effective in children and young people with severe ADHD who have refused drug treatment, healthcare professionals should assess the child or young person for possible coexisting conditions and develop a longer-term care plan.
- If a group parent-training/education programme is not effective for a child or young person with severe ADHD, and if drug treatment has not been accepted, discuss the possibility of drug treatment again or other psychological treatment (group CBT and/or social skills training), highlighting the clear benefits and superiority of drug treatment in children or young people with severe ADHD.
- Following a diagnosis of severe ADHD in a school-age child or young person healthcare professionals should, with the parents' or carers' consent, contact the child or young person's teacher to explain:
    - The diagnosis and severity of symptoms and impairment
    - The care plan
    - Any special educational needs.
- Teachers who have received training about ADHD and its management should provide behavioural interventions in the classroom to help children and young people with ADHD.

Pre-Drug Treatment Assessment

It is important that before starting drug treatment baseline measures of a range of parameters, including height and weight, are taken.

- Before starting drug treatment, children and young people with ADHD should have a full pre-treatment assessment, which should include:
    - Full mental health and social assessment
    - Full history and physical examination, including:
        - Assessment of history of exercise syncope, undue breathlessness and other cardiovascular symptoms
        - Heart rate and blood pressure (plotted on a centile chart)
        - Height and weight (plotted on a growth chart)
        - Family history of cardiac disease and examination of the cardiovascular system
    - An electrocardiogram (ECG) if there is past medical or family history of serious cardiac disease, a history of sudden death in young family members, or abnormal findings on cardiac examination
    - Risk assessment for substance misuse and drug diversion (where the drug is passed on to others for non-prescription use)
- Drug treatment for children and young people with ADHD should always form part of a comprehensive treatment plan that includes psychological, behavioural, and educational advice and interventions.

Choice of Drug for Children and Young People with ADHD

Depending on a range of factors such as the presence of coexisting conditions, side effects, and patient preference, the child or young person may be offered methylphenidate, atomoxetine, or dexamfetamine.

- Where drug treatment is considered appropriate, methylphenidate, atomoxetine and dexamfetamine are recommended, within their licensed indications, as options for the management of ADHD in children and adolescents. (Note: This recommendation is taken from the NICE technology appraisal 98, 'Methylphenidate, atomoxetine and dexamfetamine for attention deficit hyperactivity disorder [ADHD] in children and adolescents']. At the time of publication [September 2008], methylphenidate and atomoxetine did not have UK marketing authorisation for use in children younger than 6 years. Informed consent should be obtained and documented).
- The decision regarding which product to use should be based on the following:

- The presence of comorbid conditions (for example, tic disorders, Tourette's syndrome, epilepsy)
- The different adverse effects of the drugs
- Specific issues regarding compliance identified for the individual child or adolescent, for example problems created by the need to administer a mid-day treatment dose at school
- The potential for drug diversion (where the medication is forwarded on to others for non-prescription uses) and/or misuse
- The preferences of the child/adolescent and/or his or her parent or guardian.

(Note: This recommendation is taken from the NICE technology appraisal 98, 'Methylphenidate, atomoxetine and dexamfetamine for attention deficit hyperactivity disorder [ADHD] in children and adolescents.' At the time of publication [September 2008], methylphenidate and atomoxetine did not have UK marketing authorisation for use in children younger than 6 years. Informed consent should be obtained and documented).

- When a decision has been made to treat children or young people with ADHD with drugs, healthcare professionals should consider:
  - Methylphenidate for ADHD without significant comorbidity
  - Methylphenidate for ADHD with comorbid conduct disorder
  - Methylphenidate or atomoxetine when tics, Tourette's syndrome, anxiety disorder, stimulant misuse, or risk of stimulant diversion are present
  - Atomoxetine if methylphenidate has been tried and has been ineffective at the maximum tolerated dose, or the child or young person is intolerant to low or moderate doses of methylphenidate.
- When prescribing methylphenidate for the treatment of children or young people, modified-release preparations should be considered for the following reasons:
  - Convenience
  - Improving adherence
  - Reducing stigma (because the child or young person does not need to take medication at school)
  - Reducing problems schools have in storing and administering controlled drugs
  - Their pharmacokinetic profiles

  Alternatively, immediate-release preparations may be considered if more flexible dosing regimens are required, or during initial titration to determine correct dosing levels.

- When starting drug treatment children and young people should be monitored for side effects. In particular, those treated with atomoxetine should be closely observed for agitation, irritability, suicidal thinking and self-harming behaviour, and unusual changes in behaviour particularly during the initial months of treatment, or after a change in dose. Parents and/or carers should be warned about the potential for suicidal thinking and self-harming behaviour with atomoxetine and asked to report these to their healthcare professionals. Parents or carers should also be warned about the potential for liver damage in rare cases with atomoxetine (usually presenting as abdominal pain, unexplained nausea, malaise, darkening of the urine or jaundice).
- If there is a choice of more than one appropriate drug, the product with the lowest cost (taking into account the cost per dose and number of daily doses) should be prescribed. (Note: This recommendation is taken from the NICE technology appraisal 98, 'Methylphenidate, atomoxetine and dexamfetamine for attention deficit hyperactivity disorder [ADHD] in children and adolescents.' At the time of publication [September 2008], methylphenidate and atomoxetine did not have UK marketing authorisation for use in children younger than 6 years. Informed consent should be obtained and documented).
- Antipsychotics are not recommended for the treatment of ADHD in children and young people.

Poor Response to Treatment

If there has been a poor response to parent-training/education programmes, psychological treatment, and drug treatment with methylphenidate and atomoxetine, a comprehensive review is required. The following are further options for treatment: higher doses of methylphenidate or atomoxetine; switching to dexamfetamine; further or alternative psychological treatments; or referral to regional specialists for alternative drug treatment.

- If there has been a poor response following parent-training/education programmes and/or psychological treatment and treatment with methylphenidate and atomoxetine in a child or young person with ADHD, there should be a further review of:
  - The diagnosis
  - Any coexisting conditions
  - Response to drug treatment, occurrence of side effects and treatment adherence
  - Uptake and use of psychological interventions for the child or young person and their parents or carers
  - Effects of stigma on treatment acceptability
  - Concerns related to school and/or family
  - Motivation of the child or young person and the parents or carers

    - The child or young person's diet.
- Following review of poor response to treatment, a dose higher than that licensed for methylphenidate or atomoxetine should be considered following consultation with a tertiary or regional centre. This may exceed 'British National Formulary' (BNF) recommendations: methylphenidate can be increased to 0.7 mg/kg per dose up to three times a day or a total daily dose of 2.1 mg/kg/day (up to a total maximum dose of 90 mg/day for immediate release; or an equivalent dose of modified-release methylphenidate) (refer to the Table on page 34 of the original guideline document for information on stimulant dose equivalents); atomoxetine may be increased to 1.8 mg/kg/day (up to a total maximum dose of 120 mg/day). The prescriber should closely monitor the child or young person for side effects.
- Dexamfetamine should be considered in children and young people whose ADHD is unresponsive to a maximum tolerated dose of methylphenidate or atomoxetine.
- In children and young people whose ADHD is unresponsive to methylphenidate, atomoxetine and dexamfetamine, further treatment should only follow after referral to tertiary services. Further treatment may include the use of medication unlicensed for the treatment of ADHD (such as bupropion, clonidine, modafinil and imipramine) or combination treatments (including psychological treatments for the parent or carer and the child or young person). The use of medication unlicensed for ADHD should only be considered in the context of tertiary services. (Note: At the time of publication [September 2008], bupropion, clonidine, modafinil and imipramine did not have UK marketing authorisation for use in children and young people with ADHD. Informed consent should be obtained and documented.)
- A cardiovascular examination and electrocardiogram (ECG) should be carried out before starting treatment with clonidine in children or young people with ADHD.

Transition to Adult Services

Young people with ADHD receiving treatment and care from CAMHS or paediatric services should normally be transferred to adult services if they continue to have significant symptoms of ADHD or other coexisting conditions that require treatment. Transition should be planned in advance by both referring and receiving services. If needs are severe and/or complex, use of the care programme approach should be considered.

- A young person with ADHD receiving treatment and care from CAMHS or paediatric services should be reassessed at school-leaving age to establish the need for continuing treatment into adulthood. If treatment is necessary, arrangements should be made for a smooth transition to adult services with details of the anticipated treatment and services that the young person will require. Precise timing of arrangements may vary locally but should usually be completed by the time the young person is 18 years.
- During the transition to adult services, a formal meeting involving CAMHS and/or paediatrics and adult psychiatric services should be considered, and full information provided to the young person about adult services. For young people aged 16 years and older, the care programme approach (CPA) should be used as an aid to transfer between services. The young person, and when appropriate the parent or carer, should be involved in the planning.
- After transition to adult services, adult healthcare professionals should carry out a comprehensive assessment of the person with ADHD that includes personal, educational, occupational and social functioning, and assessment of any coexisting conditions, especially drug misuse, personality disorders, emotional problems and learning difficulties.

Treatment of Adults with ADHD

Drug treatment is the first-line treatment for adults with ADHD with either moderate or severe levels of impairment. Methylphenidate is the first-line drug. Psychological interventions without medication may be effective for some adults with moderate impairment, but there are insufficient data to support this recommendation. If methylphenidate is ineffective or unacceptable, atomoxetine or dexamfetamine can be tried. If there is residual impairment despite some benefit from drug treatment, or there is no response to drug treatment, CBT may be considered. There is the potential for drug misuse and diversion in adults with ADHD, especially in some settings, such as prison, although there is no strong evidence that this is a significant problem.

- For adults with ADHD, drug treatment should be the first-line treatment unless the person would prefer a psychological approach. (Note: At the time of publication [September 2008], methylphenidate, dexamfetamine and atomoxetine did not have UK marketing authorisation for use in adults with ADHD. However atomoxetine is licensed for adults with ADHD when the drug has been started in childhood. Informed consent should be obtained and documented.)
- Drug treatment for adults with ADHD should be started only under the guidance of a psychiatrist, nurse prescriber specialising in ADHD, or other clinical prescriber with training in the diagnosis and management of ADHD.
- Before starting drug treatment for adults with ADHD a full assessment should be completed, which should include:
    - Full mental health and social assessment
    - Full history and physical examination, including:
        - Assessment of history of exercise syncope, undue breathlessness, and other cardiovascular symptoms
        - Heart rate and blood pressure (plotted on a centile chart)

        - Weight
        - Family history of cardiac disease and examination of the cardiovascular system
    - An ECG if there is past medical or family history of serious cardiac disease, a history of sudden death in young family members or abnormal findings on cardiac examination
    - Risk assessment for substance misuse and drug diversion.
- Drug treatment for adults with ADHD should always form part of a comprehensive treatment programme that addresses psychological, behavioural and educational or occupational needs.
- Following a decision to start drug treatment in adults with ADHD, methylphenidate should normally be tried first.
- Atomoxetine or dexamfetamine should be considered in adults unresponsive or intolerant to an adequate trial of methylphenidate (this should usually be about 6 weeks). Caution should be exercised when prescribing dexamfetamine to those likely to be at risk of stimulant misuse or diversion. (Note: At the time of publication [September 2008], methylphenidate, dexamfetamine and atomoxetine did not have UK marketing authorisation for use in adults with ADHD. However atomoxetine is licensed for adults with ADHD when the drug has been started in childhood. Informed consent should be obtained and documented.)
- When starting drug treatment, adults should be monitored for side effects. In particular, people treated with atomoxetine should be observed for agitation, irritability, suicidal thinking and self-harming behaviour, and unusual changes in behaviour, particularly during the initial months of treatment, or after a change in dose. They should also be warned of potential liver damage in rare cases (usually presenting as abdominal pain, unexplained nausea, malaise, darkening of the urine, or jaundice). Younger adults aged 30 years or younger should also be warned of the potential of atomoxetine to increase agitation, anxiety, suicidal thinking, and self-harming behaviour in some people, especially during the first few weeks of treatment.
- For adults with ADHD stabilised on medication but with persisting functional impairment associated with the disorder, or where there has been no response to drug treatment, a course of either group or individual CBT to address the person's functional impairment should be considered. Group therapy is recommended as the first-line psychological treatment because it is the most cost effective.
- For adults with ADHD, CBT may be considered when:
    - The person has made an informed choice not to have drug treatment
    - Drug treatment has proved to be only partially effective or ineffective or the person is intolerant to it
    - People have difficulty accepting the diagnosis of ADHD and accepting and adhering to drug treatment
    - Symptoms are remitting and psychological treatment is considered sufficient to target residual (mild to moderate) functional impairment.
- Where there may be concern about the potential for drug misuse and diversion (for example, in prison services), atomoxetine may be considered as the first-line drug treatment for ADHD in adults. (Note: At the time of publication [September 2008], methylphenidate, dexamfetamine and atomoxetine did not have UK marketing authorisation for use in adults with ADHD. However atomoxetine is licensed for adults with ADHD when the drug has been started in childhood. Informed consent should be obtained and documented.)
- Drug treatment for adults with ADHD who also misuse substances should only be prescribed by an appropriately qualified healthcare professional with expertise in managing both ADHD and substance misuse. For adults with ADHD and drug or alcohol addiction disorders there should be close liaison between the professional treating the person's ADHD and an addiction specialist.
- Antipsychotics are not recommended for the treatment of ADHD in adults.

How to Use Drugs for the Treatment of ADHD

Good knowledge of the drugs used in the treatment of ADHD and their different preparations is essential (refer to the BNF and summaries of product characteristics). It is important to start with low doses and titrate upwards, monitoring effects and side effects carefully. Higher doses may need to be prescribed to some adults. The recommendations on improving adherence in children and young people may also be of use in adults.

General Principles

- Prescribers should be familiar with the pharmacokinetic profiles of all the modified-release and immediate-release preparations available for ADHD to ensure that treatment is tailored effectively to the individual needs of the child, young person or adult.
- Prescribers should be familiar with the requirements of controlled drug legislation governing the prescription and supply of stimulants.
- During the titration phase, doses should be gradually increased until there is no further clinical improvement in ADHD (that is, symptom reduction, behaviour change, improvements in education and/or relationships) and side effects are tolerable.
- Following titration and dose stabilisation, prescribing and monitoring should be carried out under locally agreed shared care arrangements with primary care.
- Side effects resulting from drug treatment for ADHD should be routinely monitored and documented in the person's notes.
- If side effects become troublesome in people receiving drug treatment for ADHD, a reduction in dose should be considered.
- Healthcare professionals should be aware that dose titration should be slower if tics or seizures are present in people with ADHD.

Initiation and Titration of Methylphenidate, Atomoxetine, and Dexamfetamine in Children and Young People

- During the titration phase, symptoms and side effects should be recorded at each dose change on standard scales (for example, Conners' 10-item scale) by parents and teachers, and progress reviewed regularly (for example, by weekly telephone contact and at each dose change) with a specialist clinician.
- If using methylphenidate in children and young people with ADHD aged 6 years and older:
  - Initial treatment should begin with low doses of immediate-release or modified-release preparations consistent with starting doses in the BNF
  - The dose should be titrated against symptoms and side effects over 4 to 6 weeks until dose optimisation is achieved
  - Modified-release preparations should be given as a single dose in the morning
  - Immediate-release preparations should be given in two or three divided doses
- If using atomoxetine in children and young people with ADHD aged 6 years and older:
  - For those weighing up to 70 kg, the initial total daily dose should be approximately 0.5 mg/kg; the dose should be increased after 7 days to approximately 1.2 mg/kg/day
  - For those weighing more than 70 kg, the initial total daily dose should be 40 mg; the dose should be increased after 7 days up to a maintenance dose of 80 mg/day
  - A single daily dose can be given; two divided doses may be prescribed to minimise side effects.
- If using dexamfetamine in children and young people with ADHD:
  - Initial treatment should begin with low doses consistent with starting doses in the BNF
  - The dose should be titrated against symptoms and side effects over 4 to 6 weeks
  - Treatment should be given in divided doses increasing to a maximum of 20 mg/day
  - For children aged 6 to 18 years, doses up to 40 mg/day may occasionally be required.

Initiation and Titration of Methylphenidate, Atomoxetine, and Dexamfetamine in Adults

- In order to optimise drug treatment, the initial dose should be titrated against symptoms and side effects over 4 to 6 weeks.
- During the titration phase, symptoms and side effects should be recorded at each dose change by the prescriber after discussion with the person with ADHD and, wherever possible, a carer (for example, a spouse, parent or close friend). Progress should be reviewed (for example, by weekly telephone contact and at each dose change) with a specialist clinician.
- If using methylphenidate in adults with ADHD:
  - Initial treatment should begin with low doses (5 mg three times daily for immediate-release preparations; the equivalent dose for modified-release preparations)
  - The dose should be titrated against symptoms and side effects over 4 to 6 weeks
  - The dose should be increased according to response up to a maximum of 100 mg/day
  - Modified-release preparations should usually be given once daily and no more than twice daily
  - Modified-release preparations may be preferred to increase adherence and in circumstances where there are concerns about substance misuse or diversion
  - Immediate-release preparations should be given up to four times daily.
- If using atomoxetine in adults with ADHD:
  - For people with ADHD weighing up to 70 kg, the initial total daily dose should be approximately 0.5 mg/kg; the dose should be increased after 7 days to approximately 1.2 mg/kg/day
  - For people with ADHD weighing more than 70 kg, the initial total daily dose should be 40 mg; the dose should be increased after 7 days up to a maintenance dose of 100 mg/day
  - The usual maintenance dose is either 80 or 100 mg, which may be taken in divided doses
  - A trial of 6 weeks on a maintenance dose should be allowed to evaluate the full effectiveness of atomoxetine.
- If using dexamfetamine in adults with ADHD:
  - Initial treatment should begin with low doses (5 mg twice daily)
  - The dose should be titrated against symptoms and side effects over 4 to 6 weeks
  - Treatment should be given in divided doses
  - The dose should be increased according to response up to a maximum of 60 mg per day
  - The dose should usually be given between two and four times daily.

Monitoring Side Effects and the Potential for Misuse in Children, Young People and Adults

- Healthcare professionals should consider using standard symptom and side effect rating scales throughout the course of treatment as an adjunct to clinical assessment for people with ADHD.

- In people taking methylphenidate, atomoxetine, or dexamfetamine:
  - Height should be measured every 6 months in children and young people
  - Weight should be measured 3 and 6 months after drug treatment has started and every 6 months thereafter in children, young people, and adults
  - Height and weight in children and young people should be plotted on a growth chart and reviewed by the healthcare professional responsible for treatment.
- If there is evidence of weight loss associated with drug treatment in adults with ADHD, healthcare professionals should consider monitoring body mass index and changing the drug if weight loss persists.
- Strategies to reduce weight loss in people with ADHD, or manage decreased weight gain in children, include:
  - Taking medication either with or after food, rather than before meals
  - Taking additional meals or snacks early in the morning or late in the evening when the stimulant effects of the drug have worn off
  - Obtaining dietary advice
  - Consuming high-calorie foods of good nutritional value.
- If growth is significantly affected by drug treatment (that is, the child or young person has not met the height expected for their age), the option of a planned break in treatment over school holidays should be considered to allow 'catch-up' growth to occur.
- In people with ADHD, heart rate and blood pressure should be monitored and recorded on a centile chart before and after each dose change and routinely every 3 months.
- For people taking methylphenidate, dexamfetamine and atomoxetine, routine blood tests and ECGs are not recommended unless there is a clinical indication.
- Liver damage is a rare and idiosyncratic adverse effect of atomoxetine and routine liver function tests are not recommended.
- For children and young people taking methylphenidate and dexamfetamine, healthcare professionals and parents or carers should monitor changes in the potential for drug misuse and diversion, which may come with changes in circumstances and age. In these situations, modified-release methylphenidate or atomoxetine may be preferred.
- In young people and adults, sexual dysfunction (that is, erectile and ejaculatory dysfunction) and dysmenorrhoea should be monitored as potential side effects of atomoxetine.
- For people taking methylphenidate, dexamfetamine or atomoxetine who have sustained resting tachycardia, arrhythmia or systolic blood pressure greater than the 95th percentile (or a clinically significant increase) measured on two occasions should have their dose reduced and be referred to a paediatrician or adult physician.
- If psychotic symptoms (for example, delusions and hallucinations) emerge in children, young people and adults after starting methylphenidate or dexamfetamine, the drug should be withdrawn and a full psychiatric assessment carried out. Atomoxetine should be considered as an alternative.
- If seizures are exacerbated in a child or young person with epilepsy, or de novo seizures emerge following the introduction of methylphenidate or atomoxetine, the drug should be discontinued immediately. Dexamfetamine may be considered as an alternative in consultation with a regional tertiary specialist treatment centre.
- If tics emerge in people taking methylphenidate or dexamfetamine, healthcare professionals should consider whether:
  - The tics are stimulant-related (tics naturally wax and wane)
  - Tic-related impairment outweighs the benefits of ADHD treatment.

  If tics are stimulant-related, reduce the dose of methylphenidate or dexamfetamine; consider changing to atomoxetine, or stop drug treatment.

- Anxiety symptoms, including panic, may be precipitated by stimulants, particularly in adults with a history of coexisting anxiety. Where this is an issue, lower doses of the stimulant and/or combined treatment with an antidepressant used to treat anxiety can be used; switching to atomoxetine may be effective.

Improving Adherence to Drug Treatment

For children and young people with ADHD, the strategies outlined in the recommendations below should be considered to improve treatment adherence. Similar strategies, adapted for age, may be considered for adults.

- Communication between the prescriber and the child or young person should be improved by educating parents or carers and ensuring there are regular three-way conversations between prescriber, parent or carer and the child or young person. For adults with ADHD, and with their permission, a spouse, partner, parent, close friend or carer wherever possible should be part of these conversations. Clear instructions about how to take the drug should be offered in picture or written format, which may include information on dose, duration, side effects, dosage schedule, the need for supervision and how this should be done.
- Healthcare professionals should consider suggesting peer-support groups for the child or young person with ADHD and their parents or carers if adherence to drug treatment is difficult or uncertain.

- Simple drug regimens (for example, once-daily modified-release doses) are recommended for people with ADHD.
- Healthcare professionals should encourage children and young people with ADHD to be responsible for their own health, including taking their medication as required, and support parents and carers in this endeavour.
- Healthcare professionals should advise parents or carers to provide the child or young person with visual reminders to take medication regularly (for example, alarms, clocks, pill boxes, or notes on calendars or fridges).
- Healthcare professionals should advise children and young people and their parents or carers that taking medication should be incorporated into daily routines (for example, before meals or after brushing teeth).
- Where necessary, healthcare professionals should help parents or carers develop a positive attitude and approach in the management of medication, which might include praise and positive reinforcement for the child or young person with ADHD.

Duration, Discontinuation, and Continuity of Treatment in Children and Young People

It is advisable to review each year whether the child or young person needs to continue drug treatment and to ensure that the long-term pattern of use is tailored to the person's needs, preferences and circumstances.

- Following an adequate treatment response, drug treatment for ADHD should be continued for as long as it remains clinically effective. This should be reviewed at least annually. The review should include a comprehensive assessment of clinical need, benefits, and side effects, taking into account the views of the child or young person, as well as those of parents, carers, and teachers, and how these views may differ. The effect of missed doses, planned dose reductions and brief periods of no treatment should be taken into account and the preferred pattern of use should also be reviewed. Coexisting conditions should be reviewed, and the child or young person treated or referred if necessary. The need for psychological and social support for the child or young person and for the parents or other carers should be assessed.
- Drug holidays are not routinely recommended; however, consideration should be given to the parent or carer and child or young person with ADHD working with their healthcare professional to find the best pattern of use, which may include periods without drug treatment.

Duration, Discontinuation and Continuity of Treatment in Adults

- Following an adequate response, drug treatment for ADHD should be continued for as long as it is clinically effective. This should be reviewed annually. The review should include a comprehensive assessment of clinical need, benefits, and side effects, taking into account the views of the person and those of a spouse, partner, parent, close friends, or carers wherever possible, and how these accounts may differ. The effect of missed doses, planned dose reductions and brief periods of no treatment should be taken into account and the preferred pattern of use should also be reviewed. Coexisting conditions should be reviewed, and the person treated or referred if necessary. The need for psychological, social, and occupational support for the person and their carers should be assessed.
- An individual treatment approach is important for adults, and healthcare professionals should regularly review (at least annually) the need to adapt patterns of use, including the effect of drug treatment on coexisting conditions and mood changes.

Clinical Algorithm(s)

None provided

Scope

Disease/Condition(s)

Attention deficit hyperactivity disorder (ADHD) and related diagnoses including hyperkinetic disorder and the three main ADHD subtypes
Common comorbidities associated with ADHD as far as these conditions affect the treatment of ADHD

Note: The guideline does not cover the separate management of comorbidities.

Guideline Category

Counseling

Diagnosis

Evaluation

Management

Treatment

Clinical Specialty

Family Practice

Internal Medicine

Nutrition

Pediatrics

Psychiatry

Psychology

Intended Users

Advanced Practice Nurses

Dietitians

Nurses

Occupational Therapists

Patients

Pharmacists

Physician Assistants

Physicians

Psychologists/Non-physician Behavioral Health Clinicians

Social Workers

Students

Guideline Objective(s)

- To provide recommendations on the diagnosis and treatment of attention deficit hyperactivity disorder (ADHD) in children, young people, and adults
- To assist clinicians, people with ADHD, and their carers by identifying the merits of particular treatment approaches where the evidence from research and clinical experience exists
- Specifically, the guideline aims to:
    - Examine the validity of the diagnostic construct of ADHD
    - Evaluate the role of specific pharmacological agents and non-pharmacological, psychological, and psychosocial interventions in the treatment and management of ADHD
    - Evaluate the role of specific services and systems for providing those services in the treatment and management of ADHD
    - Integrate the above to provide best-practice advice on the care of people with a diagnosis of ADHD through the different phases of illness, including the initiation and maintenance of treatment for the chronic condition, the treatment of acute episodes and the promotion of well-being

Consider economic aspects of various interventions for ADHD

Target Population

Children (aged 3 to 11 years), young people (aged 12 to 18 years), and adults with a diagnosis of attention deficit hyperactivity disorder (ADHD) and related diagnoses

Interventions and Practices Considered

Identification, pre-diagnostic intervention, and referral to secondary services
Diagnosis of attention deficit hyperactivity disorder (ADHD) including clinical and psychosocial assessment, developmental and psychiatric history, observer reports, and assessment of mental state
Post-diagnostic advice including general and dietary advice
Treatment of pre-school children including referral to parent-training/education program (group- or individual-based)
Treatment for school-age children and young people with moderate impairment (referral to parent-training/education program either on its own or together with cognitive behavioral therapy and social skills training)
Treatment for school-age children and young people with severe impairment and adults

- Mental health assessment
- Full history and physical examination
- Risk assessment for substance misuse
- Methylphenidate, atomoxetine, or dexamfetamine therapy
- Cognitive behavioral therapy
- Transition to adult services

Monitoring side effects

Note: The following interventions were considered but not recommended: universal screening for ADHD, drug treatment for pre-school children with ADHD, and drug treatment as first-line therapy for school-age children and young people with moderate impairment.

Major Outcomes Considered

Sensitivity and specificity of diagnostic measures
Clinical effectiveness
Attention deficit hyperactivity disorder (ADHD) symptoms
Conduct problems
Social skills
Emotional outcomes
Self-efficacy
Reading attainment
Mathematics attainment
Nonresponse to treatment
Adverse effects of stimulants
Cost-effectiveness

Methodology

Methods Used to Collect/Select the Evidence

Hand-searches of Published Literature (Primary Sources)

Hand-searches of Published Literature (Secondary Sources)

Searches of Electronic Databases

Searches of Unpublished Data

Description of Methods Used to Collect/Select the Evidence

Note from the National Guideline Clearinghouse (NGC): This guideline was developed by the National Collaborating Centre for Mental Health (NCCMH) on behalf of the National Institute for Health and Clinical Excellence (NICE). See the "Availability of Companion Documents" field for the full version of this guidance.

Systematic Clinical Literature Review

The aim of the clinical literature review was to identify and synthesise relevant evidence from the literature systematically in order to answer the specific clinical questions developed by the Guideline Development Group (GDG).

Methodology

A stepwise, hierarchical approach was taken to locating and presenting evidence to the GDG. The NCCMH developed this process based on methods set out in The Guidelines Manual (NICE, 2006c) and after considering recommendations from a range of other sources. These included:

- Clinical Policy and Practice Program of the New South Wales Department of Health (Australia)
- Clinical Evidence Online
- The Cochrane Collaboration
- Grading of Recommendations: Assessment, Development, and Evaluation (GRADE) Working Group
- New Zealand Guidelines Group
- National health Service (NHS) Centre for Reviews and Dissemination
- Oxford Centre for Evidence-Based Medicine
- Oxford Systematic Review Development Programme
- Scottish Intercollegiate Guidelines Network (SIGN)
- United States Agency for Healthcare Research and Quality

The Review Process

After the scope was finalised, a more extensive search for systematic reviews and published guidelines was undertaken. Existing NICE guidelines were updated where necessary.

Searches for evidence were updated between 6 and 8 weeks before the stakeholder consultation. After this point, studies were included only if they were judged by the GDG to be exceptional (for example, the evidence was likely to change a recommendation).

The Search Process for Questions Concerning Interventions

For questions related to interventions, the initial evidence base was formed from well-conducted randomised controlled trials (RCTs) that addressed at least one of the clinical questions (the review process is illustrated in Flowchart 1 of the full version of the original guideline document [see the "Availability of Companion Documents" field]). Although there are a number of difficulties with the use of RCTs in the evaluation of interventions in mental health, the RCT remains the most important method for establishing treatment efficacy. For other clinical questions, searches were for the appropriate study design.

All searches were based on the standard mental health related bibliographic databases (EMBASE, MEDLINE, PsycINFO, Cochrane Library, ERIC) for all trials potentially relevant to the guideline. If the number of citations generated from this search was large (more than 5000), existing systematic reviews and question-specific search filters were developed to restrict the search while minimising loss of sensitivity.

Where the evidence base was large, recent high-quality English-language systematic reviews were used primarily as a source of RCTs (see Appendix 10 in the full version of the original guideline document [see the "Availability of Companion Documents" field] for quality criteria used to assess systematic reviews). In some circumstances, however, existing data sets were utilised. Where this was the case, data were cross-checked for accuracy before use. New RCTs meeting inclusion criteria set by the GDG were incorporated into the existing reviews and fresh analyses performed.

After the initial search results had been scanned liberally to exclude irrelevant papers, the review team used a purpose built 'study information' database to manage both the included and the excluded studies (eligibility criteria were developed after consultation with the GDG). For questions without good-quality evidence (after the initial search), a decision was made by the GDG about whether to (a) repeat the search using subject-

specific databases (for example, CINAHL, AMED, SIGLE or PILOTS), (b) conduct a new search for lower levels of evidence, or (c) adopt a consensus process. Future guidelines will be able to update and extend the usable evidence base starting from the evidence collected, synthesised and analysed for this guideline.

In addition, searches were made of the reference lists of all eligible systematic reviews and included studies, as well as the list of evidence submitted by stakeholders. Known experts in the field (see Appendix 5 in the full version of the original guideline document [see the "Availability of Companion Documents" field]), based both on the references identified in early steps and on advice from GDG members, were sent letters requesting relevant studies that were in the process of being published. In addition, the tables of contents of appropriate journals were periodically checked for relevant studies.

The Search Process for Questions of Diagnosis and Prognosis

For questions related to diagnosis and prognosis, the search process was the same as described above, except that the initial evidence base was formed from studies with the most appropriate and reliable design to answer the particular question. That is, for questions about diagnosis, the initial search was for systematic reviews and meta-analyses as well as cross-sectional, factor analytic, genetic and diagnostic studies; for questions about prognosis, it was for cohort studies of representative patients. In situations where it was not possible to identify a substantial body of appropriately designed studies that directly addressed each clinical question, a consensus process was adopted.

Search Filters

Search filters developed by the review team consisted of a combination of subject heading and free-text phrases. Specific filters were developed for the guideline topic, and where necessary, for each clinical question. In addition, the review team used filters developed for systematic reviews, RCTs and other appropriate research designs (see Appendix 8 in the full version of the original guideline document [see the "Availability of Companion Documents" field]).

Study Selection

All primary-level studies included after the first scan of citations were acquired in full and re-evaluated for eligibility at the time they were being entered into the study information database (see Appendix 9 in the full version of the guideline document [see the "Availability of Companion Documents" field] for screen shots of the database). Specific eligibility criteria were developed for each clinical question and are described in the relevant clinical evidence chapters. Eligible systematic reviews and primary-level studies were critically appraised for methodological quality (see Appendix 10 in the full version of the guideline document for the quality checklists). The eligibility of each study was confirmed by at least one member of the appropriate topic group.

For some clinical questions, it was necessary to prioritise the evidence with respect to the UK context (that is, external validity). To make this process explicit, the topic groups took into account the following factors when assessing the evidence:

- Participant factors (for example, gender, age, ethnicity)
- Provider factors (for example, model fidelity, the conditions under which the intervention was performed and the availability of experienced staff to undertake the procedure)
- Cultural factors (for example, differences in standard care and differences in the welfare system).

It was the responsibility of each topic group to decide which prioritisation factors were relevant to each clinical question in light of the UK context and then decide how they should modify their recommendations.

Unpublished Evidence

The GDG used a number of criteria when deciding whether or not to accept unpublished data. First, the evidence must have been accompanied by a trial report containing sufficient detail to assess the quality of the data properly. Second, the evidence must be submitted with the understanding that data from the study and a summary of the study's characteristics would be published in the full guideline. Therefore, the GDG did not accept evidence submitted as commercial in confidence. Having said that, the GDG recognised that unpublished evidence submitted by investigators might later be retracted by those investigators if the inclusion of such data would jeopardize publication of their research.

Health Economics Methods

Search Strategy

For the systematic review of economic evidence on treatments for attention deficit hyperactivity disorder (ADHD) the standard mental-health-related bibliographic databases (EMBASE, MEDLINE, CINAHL and PsycINFO) were searched. For these databases, a health economics search filter adapted from the Centre for Reviews and Dissemination at the University of York was used in combination with a general filter for

ADHD. Additional searches were performed in specific health economics databases (National Health Service Economic Evaluation Database [NHS EED], Office of Health Economics, Health Economics Evaluation Database [OHE HEED]), as well as in the Health Technology Assessment (HTA) database. For the HTA and NHS EED databases, the general filter for ADHD was used. OHE HEED was searched using a shorter, database-specific strategy. Initial searches were performed in June 2006. The searches were updated regularly, with the final search conducted 5 weeks before the consultation period.

In parallel to searches of electronic databases, reference lists of eligible studies and relevant reviews were searched by hand. Studies included in the clinical evidence review were also screened for economic evidence.

The systematic search for economic evidence resulted in 47 potentially relevant studies. Full texts of all potentially eligible studies (including those for which relevance/eligibility was not clear from the abstract) were obtained. These publications were then assessed against a set of standard inclusion criteria by the health economists, and papers eligible for inclusion were subsequently assessed for internal validity. The quality assessment was based on the checklists used by the *British Medical Journal* to assist referees in appraising full and partial economic analyses (see Appendix 12 in the full version of the original guideline document [see the "Availability of Companion Documents" field]).

Selection Criteria

The following inclusion criteria were applied to select studies identified by the economic searches for further analysis:

- No restriction was placed on language or publication status of the papers.
- Studies published from 1990 onwards were included. This date restriction was imposed in order to obtain data relevant to current healthcare settings and costs.
- Only studies from Organisation for Economic Co-operation and Development countries were included, as the aim of the review was to identify economic and health-related quality of life (HRQoL) information transferable to the UK context.
- Selection criteria based on types of clinical conditions and patients were identical to the clinical literature review.
- Studies were included provided that sufficient details regarding methods and results were available to enable the methodological quality of the study to be assessed, and provided that the study's data and results were extractable. Poster presentations or abstracts were in principle excluded; however, they were included if they reported additional data from studies which had already been published elsewhere and met the inclusion criteria, or if they contained appropriate input data required for economic modelling that were not otherwise available.
- Full economic evaluations that compared two or more relevant options and considered both costs and consequences (that is, cost-effectiveness analysis, cost-utility analysis, cost-consequences analysis or cost-benefit analysis) were included in the review. HRQoL studies were included if they reported utility weights appropriate to use in a cost-utility analysis.

Currency Review

The NICE Evidence Update provides a summary of selected new evidence published since the literature search was last conducted. The report indicates whether the new evidence may have a potential impact on current guideline. This update should be read in conjunction with the original guideline document. Evidence updates do not replace the current accredited guidance and do not provide formal recommendations.

Number of Source Documents

Not stated

Methods Used to Assess the Quality and Strength of the Evidence

Expert Consensus

Weighting According to a Rating Scheme (Scheme Given)

Rating Scheme for the Strength of the Evidence

The quality of the evidence was based on the quality assessment components (study design, limitations to study quality, consistency, directness and any other considerations) and graded using the following definitions:

- High - Further research is very unlikely to change theÂ confidence in the estimate of the effect.

- Moderate - Further research is likely to have an important impact on the confidence in the estimate of the effect and may change the estimate.
- Low - Further research is very likely to have an important impact on the confidence in the estimate of the effect and is likely to change the estimate.
- Very low - Any estimate of effect is very uncertain

Methods Used to Analyze the Evidence

Meta-Analysis of Randomized Controlled Trials

Review of Published Meta-Analyses

Systematic Review with Evidence Tables

Description of the Methods Used to Analyze the Evidence

Note from the National Guideline Clearinghouse (NGC): This guideline was developed by the National Collaborating Centre for Mental Health (NCCMH) on behalf of the National Institute for Health and Clinical Excellence (NICE). See the "Availability of Companion Documents" field for the full version of this guidance.

Clinical Effectiveness

Data Extraction

Outcome data were extracted from all eligible studies, which met the quality criteria, into RevMan 4.2.10 (Review Manager, The Cochrane Centre, 2003) or Word tables.

Studies with factor analysis were quality assessed using a checklist elaborated and agreed by the Guideline Development Group (GDG) members.

For each outcome, a hierarchy of most suitable outcome measures was agreed upon by the GDG members. If a study reported more than one relevant outcome measure for a given outcome, only the measure with the highest hierarchy was included in the meta-analysis.

For a given outcome (continuous and dichotomous), where more than 50% of the number randomised to any group were not accounted for by trial authors, the data were excluded from the review because of the risk of bias. Where possible, however, dichotomous efficacy outcomes were calculated on an intention-to-treat basis (that is, a 'once-randomised-always-analyse' basis). This assumes that those participants who ceased to engage in the study â€“ from whatever group â€“ had an unfavourable outcome. This meant that the 50% rule was not applied to dichotomous outcomes where there was good evidence that those participants who ceased to engage in the study were likely to have an unfavourable outcome (in this case, early withdrawals were included in both the numerator and denominator). Adverse effects were entered into Review Manager as reported by the study authors because it was usually not possible to determine whether early withdrawals had an unfavourable outcome. For the outcome 'leaving the study early for any reason', the denominator was the number randomised.

Synthesising the Evidence

Where possible, meta-analysis was used to synthesise the evidence using Review Manager. If necessary, reanalyses of the data or sub-analyses were used to answer clinical questions not addressed in the original studies or reviews.

Dichotomous outcomes were analysed as relative risks (RR) with the associated 95% confidence interval (CI). A relative risk (also called a risk ratio) is the ratio of the treatment event rate to the control event rate. An RR of 1 indicates no difference between treatment and control.

The CI shows with 95% certainty the range within which the true treatment effect should lie and can be used to determine statistical significance. If the CI does not cross the 'line of no effect', the effect is statistically significant.

Continuous outcomes were analysed as weighted mean differences (WMD), or as a standardised mean difference (SMD) when different measures were used in different studies to estimate the same underlying effect. If provided, intention-to-treat data, using a method such as 'last observation carried forward', were preferred over data from completers.

To check for consistency between studies, both the I^2 test of heterogeneity and a visual inspection of the forest plots were used. The I^2 statistic describes the proportion of total variation in study estimates that is due to heterogeneity.

Study characteristics tables, generated automatically from the study database, were used to summarise general information about each study (see Appendix 17 in the full version of the original guideline document [see the "Availability of Companion Documents" field]). Where meta-analysis was not appropriate and/or possible, the reported results from each primary-level study were also presented in the included studies table (and included, where appropriate, in a narrative review).

Presenting the Data to the GDG

Study characteristics tables and, where appropriate, forest plots generated with Review Manager were presented to the GDG in order to prepare a GRADE evidence profile table for each review and to develop recommendations.

GRADE Evidence Profile Tables

A GRADE evidence profile was used to summarise both the quality of the evidence and the results of the evidence synthesis (see Table 4 in the full version of the original guideline document [see the "Availability of Companion Documents" field] for an example of an evidence profile). For each outcome, quality may be reduced depending on the study design, limitations (based on the quality of individual studies; see Appendix 10 in the full version of the original guideline document for the quality checklists), inconsistency, indirectness (that is, how closely the outcome measures, interventions and participants match those of interest), and imprecision (based on the CI around the effect size). For observational studies, the quality may be increased if there is a large effect, plausible confounding would have changed the effect, or there is evidence of a dose-response gradient (details would be provided under the other considerations column). Each evidence profile also included a summary of the findings: number of patients included in each group, an estimate of the magnitude of the effect, and the overall quality of the evidence for each outcome.

Forest Plots

Each forest plot displayed the effect size and CI for each study as well as the overall summary statistic. The graphs were organised so that the display of data in the area to the left of the 'line of no effect' indicated a 'favourable' outcome for the treatment in question.

Refer to Section 3.5 in the full version of the original guideline document (see the "Availability of Companion Documents" field) for more information.

Cost-Effectiveness

Data Extraction

Data were extracted by the health economist using a standard economic data extraction form (see Appendix 13 in the full version of the original guideline document [see the "Availability of Companion Documents" field]).

Presentation of Economic Evidence

The characteristics and results of all economic studies included in the review are provided in the form of evidence tables in Appendix 14 of the full version of the original guideline document (see the "Availability of Companion Documents" field).

Focus Group Methodology

Besides making recommendations based on the clinical and cost effectiveness of interventions for attention deficit hyperactivity disorder (ADHD), an important function of developing this guideline was understanding the experience of ADHD from the service user's point of view.

In order to provide sufficient breadth of context and depth of understanding of children's views on taking stimulant medicine, the NCCMH commissioned the London School of Economics to undertake a qualitative focus group study with children and young people on their perceptions of their use of stimulant medication, together with a review of the available literature on young people's experiences.

Data Collection

Semi-structured focus groups were used to collect data about how children and young people experience stimulant medication. Allowing children to describe their experiences through qualitative interviews has been found to be both reliable and valid, and there is compelling evidence to suggest that children are competent research participants.

Thirteen children were interviewed as part of a series of focus groups. Three children were interviewed one-to-one, either because they were unable to attend the focus groups or because they preferred to be interviewed individually.Â Written informed consent was obtained from one parent and also from the participant. Parents were also asked to complete a basic demographic questionnaire.

Data Analysis

All interviews were digitally recorded, transcribed and analysed using rigorous qualitative coding practices that meet established criteria of validity and relevance to qualitative health research. Focus groups were coded using content analysis. The coding process captured the data on two analytic levels: individual concepts were coded first, and then these concepts were grouped together under higher order themes. Systematic coding meant that it was possible to code at both the individual level and at the group level. Group-level data were represented in the frequency with which concepts and themes were expressed by group members. Transcript excerpts elucidated the meaning of codes.

A coding frame was drawn up by the lead author of the study, and validated within a coding team. The coding team applied the same codes to a transcript in order to discuss their definition and validity. This discussion resulted in refinements to the structure of categories and sub-categories, as well as refinements to individual codes.

The coding team was able to reach agreement on the validity of a majority of codes.

Refer to Sections 3.6 and 3.7 in the full version of the original guideline document [see the "Availability of Companion Documents" field] for additional information.

Methods Used to Formulate the Recommendations

Expert Consensus

Expert Consensus (Nominal Group Technique)

Informal Consensus

Description of Methods Used to Formulate the Recommendations

Note from the National Guideline Clearinghouse (NGC): This guideline was developed by the National Collaborating Centre for Mental Health (NCCMH) on behalf of the National Institute for Health and Clinical Excellence (NICE). See the "Availability of Companion Documents" field for the full version of this guidance.

The Guideline Development Group (GDG)

The GDG consisted of: professionals in clinical child and adolescent psychiatry, clinical child and adolescent psychology (and neuropsychology), psychiatry for learning disorders, developmental paediatrics, paediatrics (neurodisability), general practice and nursing; academic experts in child and adolescent psychiatry, paediatric medicine research, forensic clinical psychology, and education; service users and carers. In order to ascertain the experiences of children and young people of stimulant medication for attention deficit hyperactivity disorder (ADHD), the NCCMH commissioned a focus group study. The guideline development process was supported by staff from the NCCMH, who undertook the clinical and health economics literature searches, reviewed and presented the evidence to the GDG, managed the process and contributed to drafting the guideline.

Guideline Development Group Meetings

Twenty GDG meetings were held between March 2006 and May 2008. During each day-long GDG meeting, in a plenary session, clinical questions and clinical evidence were reviewed and assessed and recommendations formulated and reviewed.

Topic Groups

The GDG divided its workload along clinically relevant lines to simplify the guideline development process, and GDG members formed smaller topic groups to undertake guideline work in that area of clinical practice. Topic group 1 covered questions relating to diagnosis and assessment; topic group 2 covered psychological interventions; topic group 3 covered pharmacological interventions; topic group 4 covered education interventions; and topic group 5 covered dietary interventions. These groups were designed to manage the large volume of evidence appraisal efficiently before presenting it to the GDG as a whole. Each topic group was chaired by a GDG member with expert knowledge of the topic area (one of the healthcare professionals). Topic groups refined the clinical definitions of treatment interventions, reviewed and prepared the evidence with the systematic reviewer before presenting it to the GDG as a whole, and helped the GDG to identify further expertise in the topic. Topic group leaders reported the status of the group's work as part of the standing agenda. They also introduced and led the GDG discussion of the evidence review for that topic and assisted the GDG Chair in drafting that section of the guideline relevant to the work of each topic group.

Clinical Questions

Clinical questions were used to guide the identification and interrogation of the evidence base relevant to the topic of the guideline. The questions were developed using a modified nominal group technique. The process began by asking each topic group of the GDG to submit as many questions as possible. The questions were then collated and refined by the review team. The GDG members were then asked to rate each question for importance. At a subsequent meeting, the GDG Chair facilitated a discussion to further refine the questions. The results of this process were then discussed and consensus reached about which questions would be of primary importance and which would be secondary. The GDG aimed to address all primary questions, while secondary questions would only be covered time permitting.

See Appendix 6 in the full version of the original guideline document (see the "Availability of Companion Documents" field) for the list of the clinical questions.

The Review Process

The review team, in conjunction with the GDG, developed an evidence map that detailed all comparisons necessary to answer the clinical questions. The initial approach taken to locating primary-level studies depended on the type of clinical question and availability of evidence.

The GDG decided which questions were best addressed by good practice based on expert opinion, which questions were likely to have a good evidence base and which questions were likely to have little or no directly relevant evidence. Recommendations based on good practice were developed by informal consensus of the GDG. For questions with a good evidence base, the review process depended on the type of clinical question. For questions that were unlikely to have a good evidence base, a brief descriptive review was initially undertaken by a member of the GDG.

Forming the Clinical Summaries and Recommendations

Once the GRADE profile tables relating to a particular clinical question were completed, summary tables incorporating important information from the GRADE profiles were developed. Finally, the systematic reviewer in conjunction with the topic group lead produced a clinical evidence summary.

Once the GRADE profiles and clinical summaries were finalised and agreed by the GDG, the associated recommendations were drafted, taking into account the trade-off between the benefits and downsides of treatment as well as other important factors. These included economic considerations, values of the GDG and society, and the group's awareness of practical issues.

Method Used to Answer a Clinical Question in the Absence of Appropriately Designed, High-Quality Research

In the absence of level-I evidence (or a level that is appropriate to the question), or where the GDG were of the opinion (on the basis of previous searches or their knowledge of the literature) that there was unlikely to be such evidence in this guideline, an informal consensus process was adopted. This process focused on those questions that the GDG considered a priority.

Informal Consensus

The starting point for the process of informal consensus was that a member of the topic group identified, with help from the systematic reviewer, a narrative review that most directly addressed the clinical question. Where this was not possible, a brief review of the recent literature was initiated.

This existing narrative review or new review was used as a basis for beginning an iterative process to identify lower levels of evidence relevant to the clinical question and to lead to written statements for the guideline. The process involved a number of steps:

A description of what is known about the issues concerning the clinical question was written by one of the topic group members.
Evidence from the existing review or new review was then presented in narrative form to the GDG and further comments were sought about the evidence and its perceived relevance to the clinical question.
Based on the feedback from the GDG, additional information was sought and added to the information collected. This may include studies that did not directly address the clinical question but were thought to contain relevant data.
If, during the course of preparing the report, a significant body of primary-level studies (of appropriate design to answer the question) were identified, a full systematic review was conducted.
At this time, subject possibly to further reviews of the evidence, a series of statements that directly addressed the clinical question were developed.
Following this, on occasions and as deemed appropriate by the GDG, the report was then sent to appointed experts outside the GDG for peer review and comment. The information from this process was then fed back to the GDG for further discussion of the statements.
Recommendations were then developed and could also be sent for further external peer review.
After this final stage of comment, the statements and recommendations were again reviewed and agreed upon by the GDG.

Refer to Sections 3.3, 3.4, and 3.5 in the full version of the original guideline document (see the "Availability of Companion Documents" field) for additional information.

Rating Scheme for the Strength of the Recommendations

Not applicable

Cost Analysis

The following economic issues relating to diagnosis and management of children, young people and adults with attention deficit hyperactivity disorder (ADHD) were identified by the Guideline Development Group in collaboration with the health economist as primary key issues that should be considered in the guideline:

- The cost effectiveness of parent training for pre-school age children and cognitive behavioral therapy (CBT) for older children and young people
- The cost effectiveness of CBT for adults with ADHD
- The relative cost effectiveness of different pharmacological interventions for children and adults with ADHD
- The cost effectiveness of intensive medication management for children
- The relative cost effectiveness of psychological, pharmacological and combination therapies for children

In addition, literature on health related quality of life (HRQoL) of children and adults with ADHD was systematically searched to identify studies reporting appropriate utility weights that could be utilised in a cost-utility analysis.

The economic evidence identified by the health economics systematic review is summarised in the respective chapters of the guideline, following presentation of the clinical evidence. The characteristics and results of all economic studies included in the review are provided in the form of evidence tables in Appendix 14 of the full version of the original guideline document (see "Availability of Companion Documents"). Results of additional economic modelling undertaken alongside the guideline development process are also presented in the relevant chapters.

Method of Guideline Validation

External Peer Review

Internal Peer Review

Description of Method of Guideline Validation

The guideline was validated through two consultations.

1. The first draft of the guideline (The full guideline, National Institute for Clinical Excellence [NICE] guideline and Quick Reference Guide) were consulted with Stakeholders and comments were considered by the Guideline Development Group (GDG)
2. The final consultation draft of the full guideline, the NICE guideline and the Information for the Public were submitted to stakeholders for final comments.

The final draft was submitted to the Guideline Review Panel for review prior to publication.

Evidence Supporting the Recommendations

Type of Evidence Supporting the Recommendations

Recommendations are based on clinical and cost effectiveness evidence, and where this is insufficient, the Guideline Development Group used all available information sources and experience to make consensus recommendations using nominal group technique.

Benefits/Harms of Implementing the Guideline Recommendations

Potential Benefits

Effective diagnosis and management of attention deficit hyperactivity disorder

Potential Harms

Adverse Effects of Medications

- Growth (height and weight) can be affected by drug treatment and needs to be monitored during treatment.
- Patient treated with atomoxetine should be closely observed for agitation, irritability, suicidal thinking and self-harming behaviour, and unusual changes in behaviour, particularly during the initial months of treatment or after a change in dose. Parents and/or carers should be warned about the potential for suicidal thinking and self-harming behaviour with atomoxetine and asked to report these to their healthcare professionals. Parents or carers should also be warned about the potential for liver damage in rare cases with atomoxetine (usually presenting as abdominal pain, unexplained nausea, malaise, darkening of the urine, or jaundice).
- In young people and adults, sexual dysfunction (that is, erectile and ejaculatory dysfunction) and dysmenorrhoea should be monitored as potential side effects of atomoxetine.
- People taking methylphenidate, dexamfetamine, or atomoxetine who have sustained resting tachycardia, arrhythmia, or systolic blood pressure greater than the 95th percentile (or a clinically significant increase) measured on two occasions should have their dose reduced and be referred to a paediatrician or adult physician.
- If psychotic symptoms (for example, delusions and hallucinations) emerge in children, young people, and adults after starting methylphenidate or dexamfetamine, the drug should be withdrawn and a full psychiatric assessment carried out. Atomoxetine should be considered as an alternative.
- If seizures are exacerbated in a child or young person with epilepsy, or de novo seizures emerge following the introduction of methylphenidate or atomoxetine, the drug should be discontinued immediately. Dexamfetamine may be considered as an alternative in consultation with a regional tertiary specialist treatment centre.
- Anxiety symptoms, including panic, may be precipitated by stimulants, particularly in adults with a history of coexisting anxiety.
- There is a potential for drug misuse and diversion in children and young people taking methylphenidate and dexamfetamine.

Refer to the "Monitoring Side Effects and the Potential for Misuse in Children, Young People and Adults" section in the "Major Recommendations" field for additional information on adverse effects of stimulants.

Qualifying Statements

Qualifying Statements

This guidance represents the view of the Institute, which was arrived at after careful consideration of the evidence available. Healthcare professionals are expected to take it fully into account when exercising their clinical judgement. However, the guidance does not override the individual responsibility of healthcare professionals to make decisions appropriate to the circumstances of the individual patient, in consultation with the patient and/or guardian or carer and informed by the summary of product characteristics of any drugs they are considering.

Implementation of this guidance is the responsibility of local commissioners and/or providers. Commissioners and providers are reminded that it is their responsibility to implement the guidance, in their local context, in light of their duties to avoid unlawful discrimination and to have regard to promoting equality of opportunity. Nothing in this guidance should be interpreted in a way that would be inconsistent with compliance with those duties.

This guideline assumes that prescribers will use a drug's summary of product characteristics to inform their decisions for individual people. At the time of publication (September 2008), methylphenidate, atomoxetine and dexamfetamine did not have UK marketing authorisation for the treatment of adults with attention deficit hyperactivity disorder (ADHD). However, atomoxetine is licensed for use in adults with ADHD when treatment with the drug began in childhood. At the time of publication, methylphenidate and atomoxetine did not have UK marketing authorisation for use in children younger than 6 years. Prescribers should advise people with ADHD and their parents or carers of

the implications of prescribing unlicensed or 'off-label' drugs. Informed consent should be obtained and documented.

Implementation of the Guideline

Description of Implementation Strategy

The Healthcare Commission assesses the performance of National Health Service (NHS) organisations in meeting core and developmental standards set by the Department of Health in 'Standards for better health' (available from www.dh.gov.uk). Implementation of clinical guidelines forms part of the developmental standard D2. Core standard C5 says that national agreed guidance should be taken into account when NHS organisations are planning and delivering care.

The National Institute for Health and Clinical Excellence (NICE) has developed tools to help organisations implement this guidance (listed below). These are available on the NICE website (http://guidance.nice.org.uk/CG72 ; also see the "Availability of Companion Documents" field).

- Slides highlighting key messages for local discussion
- Costing tools:
  - Costing report to estimate the national savings and costs associated with implementation
  - Costing template to estimate the local costs and savings involved
- Implementation advice on how to put the guidance into practice and national initiatives that support this locally
- Audit support for monitoring local practice

Key Priorities for Implementation

- Trusts should ensure that specialist attention deficit hyperactivity disorder (ADHD) teams for children, young people and adults jointly develop age-appropriate training programmes for the diagnosis and management of ADHD for mental health, paediatric, social care, education, forensic and primary care providers and other professionals who have contact with people with ADHD.
- For a diagnosis of ADHD, symptoms of hyperactivity/impulsivity and/or inattention should:
  - Meet the diagnostic criteria in the Diagnostic and Statistical Manual of Mental Disorders 4th revision (DSM-IV) or the International Classification of Diseases 10th revision (ICD-10) (hyperkinetic disorder)
    and
  - Be associated with at least moderate psychological, social and/or educational or occupational impairment based on interview and/or direct observation in multiple settings
    and
  - Be pervasive, occurring in two or more important settings including social, familial, educational and/or occupational settings.

  As part of the diagnostic process, include an assessment of the person's needs, coexisting conditions, social, familial and educational or occupational circumstances and physical health. For children and young people, there should also be an assessment of their parents' or carers' mental health.
- Healthcare professionals should offer parents or carers of pre-school children with ADHD a referral to a parent-training/education programme as the first-line treatment if the parents or carers have not already attended such a programme or the programme has had a limited effect.
- Teachers who have received training about ADHD and its management should provide behavioural interventions in the classroom to help children and young people with ADHD.
- If the child or young person with ADHD has moderate levels of impairment, the parents or carers should be offered referral to a group parent-training/ education programme, either on its own or together with a group treatment programme (cognitive behavioural therapy [CBT] and/or social skills training) for the child or young person.
- In school-age children and young people with severe ADHD, drug treatment should be offered as the first-line treatment. Parents should also be offered a group-based parent-training/education programme.
- Drug treatment for children and young people with ADHD should always form part of a comprehensive treatment plan that includes psychological, behavioural and educational advice and interventions.
- When a decision has been made to treat children or young people with ADHD with drugs, healthcare professionals should consider:
  - Methylphenidate for ADHD without significant comorbidity

    - Methylphenidate for ADHD with comorbid conduct disorder
    - Methylphenidate or atomoxetine when tics, Tourette's syndrome, anxiety disorder, stimulant misuse or risk of stimulant diversion are present
    - Atomoxetine if methylphenidate has been tried and has been ineffective at the maximum tolerated dose, or the child or young person is intolerant to low or moderate doses of methylphenidate
- Drug treatment for adults with ADHD should always form part of a comprehensive treatment programme that addresses psychological, behavioural and educational or occupational needs.
- Following a decision to start drug treatment in adults with ADHD, methylphenidate should normally be tried first.

Implementation Tools

Audit Criteria/Indicators

Patient Resources

Quick Reference Guides/Physician Guides

Resources

Slide Presentation

Staff Training/Competency Material

For information about availability, see the *Availability of Companion Documents* and *Patient Resources* fields below.

Institute of Medicine (IOM) National Healthcare Quality Report Categories

IOM Care Need

Getting Better

Living with Illness

IOM Domain

Effectiveness

Patient-centeredness

Identifying Information and Availability

Bibliographic Source(s)

National Collaborating Centre for Mental Health. Attention deficit hyperactivity disorder. Diagnosis and management of ADHD in children, young people and adults. London (UK): National Institute for Health and Clinical Excellence (NICE); 2008 Sep. 59 p. (Clinical guideline; no. 72).

Adaptation

Not applicable: The guideline was not adapted from another source.

Date Released

2008 Sep (reaffirmed 2013 Jul)

Guideline Developer(s)

National Collaborating Centre for Mental Health - National Government Agency [Non-U.S.]

Source(s) of Funding

National Institute for Health and Clinical Excellence (NICE)

Guideline Committee

Guideline Development Group

Composition of Group That Authored the Guideline

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Financial Disclosures/Conflicts of Interest

To minimise and manage any potential conflicts of interest, and to avoid any public concern that commercial or other financial interests have

affected the work of the Guideline Development Group (GDG) and influenced guidance, members of the GDG must declare as a matter of public record any interests held by themselves or their families which fall under specified categories. These categories include any relationships they have with the healthcare industries, professional organisations and organisations for people who misuse drugs and their families and carers.

Individuals invited to join the GDG were asked to declare their interests before being appointed. To allow the management of any potential conflicts of interest that might arise during the development of the guideline, GDG members were also asked to declare their interests at each GDG meeting throughout the guideline development process. The interests of all the members of the GDG are listed in Appendix 2 of the full version of the original guideline document (see the "Availability of Companion Documents" field), including interests declared prior to appointment and during the guideline development process.

Guideline Status

Note: This guideline has been updated. The National Guideline Clearinghouse (NGC) is working to update this summary.

Guideline Availability

The updated guideline is available from the National Institute for Health and Clinical Excellence (NICE) Web site .

Availability of Companion Documents

The following are available:

- Attention deficit hyperactivity disorder. Evidence update. London (UK): National Institute for Health and Clinical Excellence (NICE); 2013 Jul. 28 p. (Evidence update; no. 45). Electronic copies: Available in Portable Document Format (PDF) format from the National Institute for Health and Clinical Excellence (NICE) Web site .
- Attention deficit hyperactivity disorder. The NICE guideline on diagnosis and management of ADHD in children, young people and adults. Full guideline. London (UK): National Institute for Health and Clinical Excellence (NICE); 2009. 664 p. (Clinical guideline; no. 72). Electronic copies: Available in Portable Document Format (PDF) format from the National Institute for Health and Clinical Excellence (NICE) Web site .
- Attention deficit hyperactivity disorder. Diagnosis and management of ADHD in children, young people and adults. Quick reference guide. London (UK): National Institute for Health and Clinical Excellence; 2008 Sep. 24 p. (Clinical guideline; no. 72). Electronic copies: Available in Portable Document Format (PDF) from the NICE Web site .
- Attention deficit hyperactivity disorder. Costing report. Implementing NICE guidance. London (UK): National Institute for Health and Clinical Excellence; 2008 Sep. 37 p. (Clinical guideline; no. 72). Electronic copies: Available in Portable Document Format (PDF) from the NICE Web site .
- Attention deficit hyperactivity disorder. Costing template. Implementing NICE guidance. London (UK): National Institute for Health and Clinical Excellence; 2008. Various p. (Clinical guideline; no. 72). Electronic copies: Available from the NICE Web site .
- Attention deficit hyperactivity disorder. Implementing NICE guidance. Slide set. London (UK): National Institute for Health and Clinical Excellence; 2008. 16 p. (Clinical guideline; no. 72). Electronic copies: Available from the NICE Web site .
- Attention deficit hyperactivity disorder. Services for adults. Audit support. London (UK): National Institute for Health and Clinical Excellence; 2008. 41 p. (Clinical guideline; no. 72). Electronic copies: Available from the NICE Web site .
- Attention deficit hyperactivity disorder: a guide to management in adults and children. Online educational tool. London (UK): National Institute for Health and Clinical Excellence; 2008. Various p. (Clinical guideline; no. 72). Electronic copies: Available from the NICE Web site .
- The guidelines manual 2007. London (UK): National Institute for Health and Clinical Excellence (NICE); 2007 April. Electronic copies: Available in Portable Document Format (PDF) from the NICE Archive Web site .

Patient Resources

The following is available:

- Attention deficit hyperactivity disorder. Understanding NICE guidance. Information for people who use NHS services. London (UK): National Institute for Health and Clinical Excellence (NICE); 2008 Sep. 20 p. Available in Portable Document Format (PDF) from the National Institute for Health and Clinical Excellence (NICE) Web site .

Please note: This patient information is intended to provide health professionals with information to share with their patients to help them better understand their health and their diagnosed disorders. By providing access to this patient information, it is not the intention of NGC to provide specific medical advice for particular patients. Rather we urge patients and their representatives to review this material and then to consult with a licensed health professional for evaluation of treatment options suitable for them as well as for diagnosis and answers to their personal medical questions. This patient information has been derived and prepared from a guideline for health care professionals included on NGC by the authors or publishers of that original guideline. The patient information is not reviewed by NGC to establish whether or not it accurately reflects the original guideline's content.

NGC Status

This summary was completed by ECRI Institute on February 15, 2010. An evidence update was completed by the developer in July 2013 and this summary was updated by ECRI Institute on October 30, 2013. This summary was updated by ECRI Institute on April 7, 2014 following the U.S. Food and Drug Administration advisory on Methylphenidate ADHD Medications. This summary was updated by ECRI Institute on July 23, 2015 following the U.S. Food and Drug Administration advisory on the Daytrana Patch (methylphenidate transdermal system).

The National Institute for Health and Clinical Excellence (NICE) has granted the National Guideline Clearinghouse (NGC) permission to include summaries of their clinical guidelines with the intention of disseminating and facilitating the implementation of that guidance. NICE has not yet verified this content to confirm that it accurately reflects that original NICE guidance and therefore no guarantees are given by NICE in this regard. All NICE clinical guidelines are prepared in relation to the National Health Service in England and Wales. NICE has not been involved in the development or adaptation of NICE guidance for use in any other country. The full versions of all NICE guidance can be found at www.nice.org.uk .

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